



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,546	06/26/2003	Bin Lu	SEAG 63332	5232

7590 09/07/2004
Robert P. Lenart
Pietragallo, Bosick & Gordon
One Oxford Centre, 38th Floor
301 Grant Street
Pittsburgh, PA 15219

EXAMINER

RICKMAN, HOLLY C

ART UNIT	PAPER NUMBER
----------	--------------

1773

DATE MAILED: 09/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/606,546	Applicant(s) LU ET AL.
	Examiner Holly Rickman	Art Unit 1773

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 11-18 is/are rejected.
- 7) ☒ Claim(s) 9, 10, 19 and 20 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>8/4/03 & 6/26/03 (6 pages total)</u> | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-3, 6-7 11-13 and 16-17 are rejected under 35 U.S.C. 102(e) as being anticipated by Shimizu et al. (US 2003/0059651).

Shimizu et al. disclose a perpendicular magnetic recording medium having a substrate, a soft magnetic layer, a non-magnetic orientation control film (corresponding to non-magnetic “intermediate” film), an hcp CoCrPtB intermediate film, and a perpendicular CoPt alloy magnetic recording film (see p. 12, Table 6, Example 34; paragraphs 163-165).

With respect to claim 6-7 and 16-17, Shimizu et al. disclose an embodiment of the invention having a perpendicular magnetic recording film formed from multiple Co alloy hcp layers (see paragraph 94). Thus, the reference discloses a structure as follows: substrate/soft magnetic layer/non-magnetic orientation layer (=seedlayer), an hcp intermediate layer (= hcp underlayer)/ CoCrPt-based perpendicular magnetic recording layer (= hcp layer)/CoCrPt-based perpendicular magnetic recording layer.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 4-5 and 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu et al. (US 2003/0059651) in view of Ranjan et al. (US 5840394).

Shimizu et al. teach all of the limitations of the claims, as set forth above, except for the use of an oxide grain refining material in the hcp (Co-alloy magnetic) layer.

Ranjan et al. teach that it is known in the art to add an oxide material such as SiO₂ to a Co alloy magnetic layer in order to segregate the grains in the layer and reduce medium noise (col. 1, lines 21-59).

It would have been obvious to one of ordinary skill in the art at the time of invention to add an oxide such as SiO₂ to the Co alloy magnetic layers taught by Shimizu et al. in order to achieve magnetic grain isolation and decrease medium noise as suggested by Ranjan et al.

5. Claims 8 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu et al. (US 2003/0059651) in view of Yamada et al. (J Appl. Phys., Col. 85, No. 8, 15 April 1999, pp. 5094-96).

Shimizu et al. disclose a perpendicular magnetic recording medium having a substrate, a soft magnetic layer, a non-magnetic orientation control film (corresponding to non-magnetic

Art Unit: 1773

“intermediate” film), an hcp CoCrPtB intermediate film, and a perpendicular CoPt alloy magnetic recording film (see p. 12, Table 6, Example 34; paragraphs 163-165). The reference is silent with respect to the use of a Co₃Pt alloy recording layer.

Yamada et al. teach that it is known in the art that CoPt alloys and Co₃Pt alloys have high perpendicular magnetic anisotropy (see Introduction paragraph).

It would have been obvious to one of ordinary skill in the art at the time of invention to substitute a Co₃Pt alloy for the CoPt alloy taught by Shimizu et al. in view of the art recognized equivalence of the two materials as taught by Yamada et al.

Allowable Subject Matter

6. Claims 9-10 and 19-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The closest prior art to Shimizu et al. and Yamada et al. fails to teach or suggest the use of Co₃Pt ordered magnetic recording films formed from Co₃Pt alloyed with one of Cr, Ta, B, Nb, Mo, Si, or Ge.

Conclusion

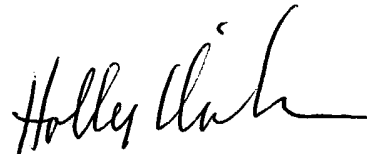
7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ikeda et al. (US 64468670) and Tanahashi et al. (US 6511761) are cited as art of interest.

Art Unit: 1773

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Holly Rickman whose telephone number is (571) 272-1514. The examiner can normally be reached on Monday-Friday 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul J. Thibodeau can be reached on (571) 272-1516. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Holly Rickman
Primary Examiner
Art Unit 1773

hr
August 31, 2004